The Role of Hedge Funds in the Security Price Formation Process

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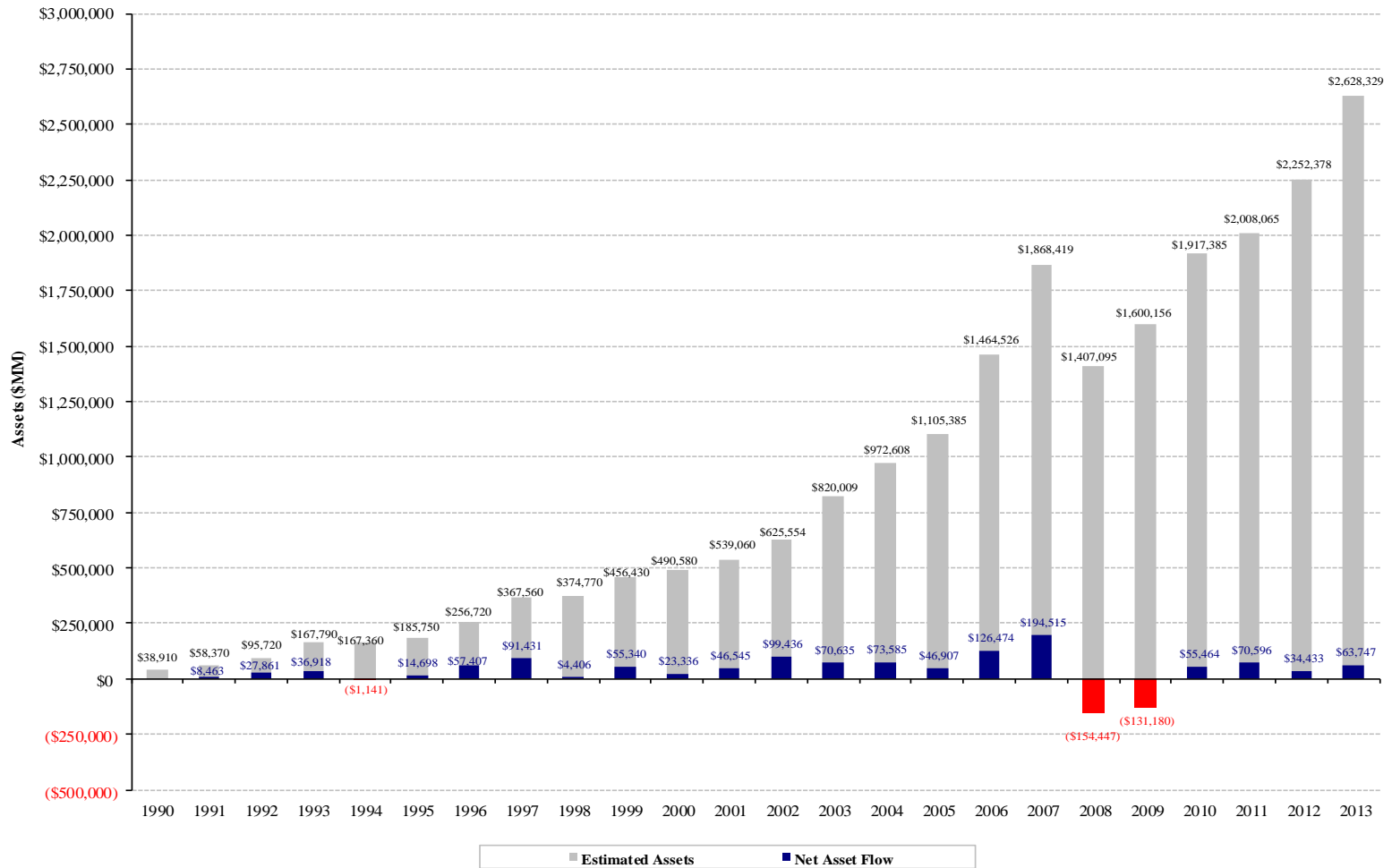
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Total Hedge Fund Assets Under Management (1990-2013)

Year	Estimated Assets	Net Asset Flow
1990	$38,910	
1991	$58,370	$8,463
1992	$95,720	$27,861
1993	$167,790	$36,918
1994	$167,360	($1,141)
1995	$185,750	$14,698
1996	$256,720	$57,407
1997	$367,560	$91,431
1998	$374,770	$4,406
1999	$456,430	$55,340
2000	$490,580	$23,336
2001	$539,060	$46,545
2002	$625,554	$99,436
2003	$820,009	$70,635
2004	$972,608	$73,585
2005	$1,105,385	$46,907
2006	$1,464,526	$126,474
2007	$1,868,419	$194,515
2008	$1,407,095	($154,447)
2009	$1,600,156	($131,180)
2010	$1,917,385	$55,464
2011	$2,008,065	$70,596
2012	$2,252,378	$34,433
2013	$2,628,329	$63,747

Legend: Estimated Assets · Net Asset Flow

Assets ($MM)

Do They Destabilize the Market?

Asian currency crisis:

Brown *et al.* (1999): *No profits for major funds*

Tech bubble:

Brunnermeier and Nagel (2004)

Griffin and Xu (2009)

Both conclude HFs exacerbated bubble or does not add value

Activist:

Brav *et al.* (2008), Becht, Frank and Grant (2008), Mietzner and Schwiezer (2008)

HFs profit and other investors benefit

Liquidity

Lehman Crisis

- Aragon and Strahan (2009): Lehman effects linked to prime brokers.

Algorithmic Trading

- Hendershott et al. (2011): Algo trading improves liquidity.

On Average

- Jynlha et al. (2012): Use the factor approach to detect liquidity provision.

HFs Mostly Are Suppliers of Liquidity

What Do We not yet Know about Hedge Funds and the Markets?

- Do they exploit mispricing?
- Do they make prices more efficient?

Data

- Hedge fund data: TASS, HFR, CISDM, Barclay Hedge, and Morningstar
- Online sources and Form ADV
- 1,356 hedge fund companies, among which 1,053 (5,071 funds) are from the five databases and 303 are from other sources
- Equity holding data: CDA/Spectrum 13F
- Equity data: CRSP and COMPUSTAT

Table 2: Summary Statistics of Stock Characteristics

Variable (All)	Mean	Std. Dev.	Median	25%	75%
Book/Market	0.67	0.42	0.58	0.35	0.89
Market cap ($bil)	2.10	11.09	0.24	0.07	0.92
Dividend yield (%)	0.36	0.52	0.00	0.00	0.61
Age (month)	190.05	183.21	136.00	57.00	257.00
Price ($)	22.42	22.81	18.13	10.68	29.69
SP500 dummy	0.13	0.33	0.00	0.00	0.00

Variable (top HF)	Mean	Std. Dev.	Median	25%	75%
Book/Market	0.64	0.43	0.55	0.32	0.87
Market cap ($bil)	0.80	1.69	0.30	0.12	0.81
Dividend yield (%)	0.22	0.45	0.00	0.00	0.25
Age (month)	156.18	166.97	100.00	42.00	205.00
Price ($)	22.35	20.38	17.56	10.69	28.37
SP500 dummy	0.08	0.28	0.00	0.00	0.00

Table 3: Lagged Alpha and Institutional Ownership for Positive Alpha Stocks

VARIABLES	(1) IO_HF$_t$	(2) IO_Non_HF$_t$	(1) – (2) p-value of difference
Alpha$_{t-1}$	0.096***	-0.011	
	(6.09)	(-0.91)	0.00
Ln(Book/Market)$_{t-1}$	0.046***	0.106***	
	(4.33)	(9.94)	0.00
Ln(Market Cap)$_{t-1}$	0.187***	0.532***	
	(11.15)	(28.00)	0.00
Ln(Dividend yield)$_{t-1}$	-0.128***	-0.191***	
	(-12.50)	(-15.10)	0.00
Ln(Age)$_{t-1}$	-0.060***	0.041***	
	(-4.40)	(4.27)	0.00
Ln(Price)$_{t-1}$	-0.050***	0.110***	
	(-3.56)	(7.02)	0.00
SP500 dummy$_{t-1}$	-0.084***	-0.055***	
	(-5.87)	(-4.04)	0.14
Constant	-0.117***	0.109***	
	(-4.03)	(4.46)	
R-squared	0.13	0.39	

Idiosyncratic Risk

- The price efficiency interpretation:
  - The market is efficient and already incorporates firm-specific information, stocks with high idiosyncratic risk are riskier to hedge so hedge funds will avoid these stocks. In the Grinold and Kahn (1999) world, idiosyncratic risk reduces the information ratio

- The price inefficiency interpretation:
  - High idiosyncratic risk stocks represent for inefficiencies to investment opportunities

Table 4: Lagged Idiosyncratic Risk and Institutional Ownership for Positive Alpha Stocks

VARIABLES	(1) IO_HF$_t$	(2) IO_Non_HF$_t$	(1) – (2) p-value of difference
Idio. risk$_{t-1}$	**0.127***	-0.001	
	(6.28)	(-0.01)	0.00
Ln(Book/Market)$_{t-1}$	0.050***	0.108***	
	(4.53)	(10.35)	0.00
Ln(Market Cap)$_{t-1}$	0.187***	0.534***	
	(11.26)	(28.50)	0.00
Ln(Dividend yield)$_{t-1}$	-0.125***	-0.191***	
	(-11.47)	(-15.03)	0.00
Ln(Age)$_{t-1}$	-0.058***	0.042***	
	(-4.32)	(4.45)	0.00
Ln(Price)$_{t-1}$	-0.040***	0.112***	
	(-2.62)	(6.85)	0.00
SP500 dummy$_{t-1}$	-0.084***	-0.055***	
	(-5.87)	(-4.03)	0.14
Constant	0.086***	0.092***	
	(5.90)	(5.76)	
R-squared	0.14	0.40	

Table 5: Lagged Alpha and the Changes in Institutional Ownership

VARIABLES	(1) ΔIO_HF_t	(2) $\Delta IO\_Non\_HF_t$	(1) – (2) p-value of difference
Alpha$_{t-1}$	0.043**	0.007	
	(2.44)	(0.31)	0.08
Ln(Book/Market)$_{t-1}$	0.003	-0.027	
	(0.26)	(-1.61)	0.12
Ln(Market Cap)$_{t-1}$	0.009	0.006	
	(0.47)	(0.27)	0.91
Ln(Dividend yield)$_{t-1}$	0.006	-0.016	
	(0.58)	(-1.27)	0.17
Ln(Age)$_{t-1}$	0.007	-0.106***	
	(0.62)	(-7.13)	0.00
Ln(Price)$_{t-1}$	-0.013	-0.098***	
	(-0.86)	(-4.48)	0.00
SP500 dummy$_{t-1}$	-0.010	-0.001	
	(-0.78)	(-0.08)	0.64
Constant	-0.068**	0.111***	
	(-2.04)	(2.97)	
R-squared	0.07	0.11	

Table 6: Lagged Idiosyncratic Risk and the Changes in Institutional Ownership

VARIABLES	(1) ΔIO_HF_t	(2) $\Delta IO\_Non\_HF_t$	(1) − (2) p-value of difference
Idio. risk$_{t-1}$	0.052**	-0.005	
	(2.17)	(-0.23)	0.03
Ln(Book/Market)$_{t-1}$	0.004	-0.032*	
	(0.28)	(-1.91)	0.06
Ln(Market Cap)$_{t-1}$	0.006	0.005	
	(0.36)	(0.21)	0.74
Ln(Dividend yield)$_{t-1}$	0.007	-0.021	
	(0.61)	(-1.59)	0.06
Ln(Age)$_{t-1}$	0.008	-0.105***	
	(0.70)	(-7.03)	0.00
Ln(Price)$_{t-1}$	-0.010	-0.106***	
	(-0.55)	(-4.67)	0.00
SP500 dummy$_{t-1}$	-0.011	-0.001	
	(-0.86)	(-0.08)	0.64
Constant	0.020	0.124***	
	(1.40)	(7.94)	
R-squared	0.07	0.11	

Does Hedge Fund Trading Reduce Mispricing?

Table 7: Institutional Ownership and Changes in *Alpha*

VARIABLES	ΔAlpha$_t$	ΔAlpha$_t$
IO_HF$_{t-1}$	**-0.047*****	
	(-4.44)	
IO_Non_HF$_{t-1}$	0.019	
	(1.36)	
ΔIO_HF$_{t-1}$		**-0.053*****
		(-4.80)
ΔIO_Non_HF$_{t-1}$		-0.019*
		(-1.81)
Ln(Book/Market)$_{t-1}$	0.199***	0.194***
	(13.88)	(14.23)
Ln(Market Cap)$_{t-1}$	-0.007	0.004
	(-0.39)	(0.19)
Ln(Dividend yield)$_{t-1}$	0.115***	0.117***
	(10.87)	(12.12)
Ln(Age)$_{t-1}$	-0.003	-0.002
	(-0.25)	(-0.12)
Ln(Price)$_{t-1}$	0.300***	0.292***
	(20.34)	(20.28)
SP500 dummy$_{t-1}$	0.006	-0.001
	(0.56)	(-0.06)
Constant	-1.237***	-1.226***
	(-71.24)	(-70.25)
R-squared	0.26	0.26

Table 8: Institutional Ownership and Changes in Idiosyncratic Risk

VARIABLES	ΔIdioRisk$_t$	ΔIdioRisk$_t$
IO_HF$_{t-1}$	-0.035***	
	(-3.02)	
IO_Non_HF$_{t-1}$	0.039***	
	(3.53)	
ΔIO_HF$_{t-1}$		-0.045***
		(-3.32)
ΔIO_Non_HF$_{t-1}$		0.021**
		(2.19)
Ln(Book/Market)$_{t-1}$	-0.005	-0.004
	(-0.39)	(-0.40)
Ln(Market Cap)$_{t-1}$	-0.105***	-0.093***
	(-6.83)	(-6.19)
Ln(Dividend yield)$_{t-1}$	-0.004	0.000
	(-0.33)	(0.03)
Ln(Age)$_{t-1}$	-0.038***	-0.031**
	(-3.27)	(-2.57)
Ln(Price)$_{t-1}$	0.131***	0.134***
	(9.97)	(9.84)
SP500 dummy$_{t-1}$	0.005	0.006
	(0.51)	(0.59)
Constant	0.032*	0.031*
	(1.95)	(1.92)
R-squared	0.10	0.11

Hedge Fund Ownership and Stock Return Predictability

- Use the full sample of stocks

$$r_{i,t+m} = a_t + b_{1t} \, IO\_HF_{i,t-1} + b_{2t} \, IO\_Non\_HF_{i,t-1} + c_{1t} \, \Delta IO\_HF_{i,t}$$

$$+ c_{2t} \, \Delta IO\_Non\_HF_{i,t} + d_t' X_{i,t-1} + \varepsilon_{i,t},$$

Table 9: Predicting Stock Returns Based on Institutional Ownership

	(1)	(2)	(3)	(4)
VARIABLES	Ret$_{t+1}$	Ret$_{t+1}$	Ret$_{t+2}$	Ret$_{t+2}$
IO_HF$_{t-1}$	0.002		0.001	
	(0.56)		(0.28)	
IO_Non_HF$_{t-1}$	0.004		0.008	
	(0.61)		(1.15)	
ΔIO_HF$_t$		0.009***		0.002
		(3.31)		(0.98)
ΔIO_Non_HF$_t$		0.001		0.004
		(0.18)		(1.32)
Ln(Book/Market)$_{t-1}$	0.017*	0.019**	0.024***	0.026***
	(1.80)	(2.02)	(2.68)	(2.92)
Ln(Market Cap)$_{t-1}$	-0.014*	-0.014	-0.014*	-0.010
	(-1.70)	(-1.42)	(-1.78)	(-1.12)
Ln(Dividend yield)$_{t-1}$	0.019**	0.019**	0.013	0.014
	(2.27)	(2.04)	(1.59)	(1.51)
Ln(Age)$_{t-1}$	0.016***	0.016***	0.018***	0.019***
	(3.09)	(3.02)	(3.51)	(3.69)
Ln(Price)$_{t-1}$	0.014	0.014	0.012	0.014
	(1.42)	(1.45)	(1.24)	(1.53)
SP500 dummy$_{t-1}$	0.001	0.001	0.002	0.001
	(0.15)	(0.17)	(0.40)	(0.34)
Constant	0.001	0.001	0.002	0.002
	(0.37)	(0.48)	(1.20)	(1.43)
R-squared	0.05	0.05	0.05	0.05

VARIABLES	Ret$_{t+1}$	Ret$_{t+1}$	Ret$_{t+2}$	Ret$_{t+2}$
IO_HF$_{t-1}$	-0.001		-0.001	
	(-0.41)		(-0.29)	
IO_Non_HF$_{t-1}$	0.002		0.004	
	(0.33)		(0.72)	
ΔIO_HF$_t$		0.007***		0.000
		(2.68)		(0.02)
ΔIO_Non_HF$_t$		-0.008***		-0.002
		(-3.44)		(-0.77)
Ret$_{t-1}$	0.035***	0.036***	0.034***	0.035***
	(4.31)	(4.52)	(4.11)	(4.12)
Ret$_{t-2}$	0.037***	0.036***	0.028***	0.029***
	(4.33)	(4.31)	(3.64)	(3.61)
Ret$_{t-3}$	0.026***	0.027***	-0.007	-0.008
	(4.04)	(4.09)	(-1.20)	(-1.34)
Ret$_{t-4}$	-0.007	-0.006	-0.015***	-0.014***
	(-1.17)	(-1.03)	(-2.88)	(-2.69)
Ln(Book/Market)$_{t-1}$	0.027***	0.028***	0.024***	0.025***
	(3.33)	(3.55)	(3.10)	(3.31)
Ln(Market Cap)$_{t-1}$	-0.015**	-0.016*	-0.018**	-0.016*
	(-2.03)	(-1.88)	(-2.44)	(-1.85)
Ln(Dividend yield)$_{t-1}$	0.014*	0.015*	0.007	0.009
	(1.88)	(1.80)	(1.08)	(1.17)
Ln(Age)$_{t-1}$	0.013***	0.013***	0.015***	0.015***
	(2.73)	(2.69)	(3.16)	(3.22)
Ln(Price)$_{t-1}$	0.014	0.014	0.017*	0.019**
	(1.51)	(1.54)	(1.87)	(2.14)
SP500 dummy$_{t-1}$	0.001	0.001	0.001	0.001
	(0.15)	(0.30)	(0.28)	(0.28)
Constant	0.003*	0.003*	0.004***	0.005***
	(1.76)	(1.84)	(2.68)	(2.97)
R-squared	0.08	0.07	0.07	0.07

Conclusion

- Using factor-models to identify investment opportunities, hedge funds tend to hold under-valued securities while other institutional investors do not

- The larger the hedge fund holdings on securities, the larger the reduction in mispricing in the following quarter; this is also true for idiosyncratic risk

- An increase in the hedge fund ownership in stocks predicts positive future stock returns up to one quarter

- In sum, hedge funds play a positive role in security price forming process and improve market efficiency